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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/645,896	08/25/2000	Jeffrey J. Gold	PD-200223	6089

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EXAMINER	
STEVENS, THOMAS H	
ART UNIT	**PAPER NUMBER**
2123	3

DATE MAILED: 09/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/645,896	GOLD, JEFFREY J.	
	Examiner	Art Unit	
	Thomas H. Stevens	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 August 2000* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 August 2000* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. Claims 1-15 have been submitted.

2. Claims 1-15 have been examined and rejected.

Oath/Declaration

3. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application-by-application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:
It does not identify the citizenship of each inventor.

Abstract

4. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

- The legal phraseology is used on line 12 of the abstract:" but supplies said data...".

Objections

Drawings

5. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, each specific figure must be show the following features from the claims:

Claim 3: Neither figure discloses a common IP address of simulated ground stations.

Claim 4: Neither figure diagrams multiple ground stations, nor common IP address among them.

Claim 7: Figure 2 doesn't disclose "simultaneously" (pg. 13, line 4) for all supported ground stations. Neither figure mentions "identifying desired ground stations" (pg. 13, line 5). Is the AD RTS in Figure 1 the satellite/spacecraft?

Claim 11: Neither figure discloses the ground station having a unique port address.

Claim 12: Neither figure discloses the range sever name in response to a unique port address.

Claim 13: Claim 8 discloses the following:

In relation to figure 2, where or who is coupling to the spacecraft status and control client?

Claim 15: Difficulty matching figure two with the sequence of events mention from said claim (pg. 14, lines1-3). Figure 2 discloses range data whereas the claim (pg. 14, line 2) states range data generator.

No new matter should be entered. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over CSC (February 2000) in view of Zammit (1997).

7. One of ordinary skill-level in the art at the time of invention would have modified the teachings of CSC with Zammit, since it would have been obvious to add a local area or wide area network, in the same field of endeavor, to an existing group of scientists monitoring airborne operations, thus performing a common goal. Daily communication between operators and operator-to-airborne platforms requires swift real-time communications. Utilizing the Internet is a means of sustaining that requirement. As to claims 1-6, Computer Science Corporation (CSC) teaches several Internet protocols that allow ground control operators to communicate to their airborne platforms and to each other. This concept is called the Operating Missions as Nodes on the Internet (OMNI). OMNI is an experimental Internet-based commercial off-the-shelf (COTS) hardware and software configuration to supplement a wide area network for multiple ground station operators ability to communicate among each other and their multiple platforms: airborne (e.g., satellites, planes, balloons), shipborne (commercial, military) or land-based (field sites, tracking stations). The bulk of the experiment is centered on the design of Internet Protocols (IPs). Each IP is assigned to a platform such that each protocol layer delivers packets between any network source and destination (CSC briefing slide 12). These IPs were confined to transmission lines. Now scientist are experimenting encompassing IPs to the RF signal so as to provide multiple operators access to any airborne platform via the Internet. The goal of the OMNI prototype is to demonstrate IP's operations use over space links. (CSC briefing slide 12).

Simulation of apparatus was done in the laboratory and soon after on a ship over the Black Sea on Augusts 11,1999. The entire network spread sheet is disclosed on page 13 of CSC's briefing slide. However, CSC does not detail any simulation or experimentation of the day-to-day operations of the airborne platforms themselves whereas Zammit does.

Zammit teaches a case history of hardware-in-the-loop air-to-ground simulation for their HSC family of geosynchronous communications satellites. The HS601 is the attitude determination and control subsystem (ADCS), which comprises of sensors, control actuators, and microprocessor hardware and software; all required to control vehicle attitude during all phases of the mission. The ADCS supports antenna deployment, soar wing positioning, autonomous spacecraft management and failure detection and response functions that allow the spacecraft to maintain service with minimal ground control activity. One major component part includes the redundant spacecraft control processors (SCP). This processor is part to the ADCS development process by which the SCP breadboard hardware supports the mixed simulation test (MST).

The MST system is capable of operating with either breadboard or flight SCP units to simulate all mission phases, such as hardware and software; to generate all ADCS commands and process all SCP generated telemetry; all interfacing for command telemetry, sensors, actuators, thrusters, and power designated to emulate the spacecraft interfaces; access to all signal I/O for SCP and internal software variables

and constants at Zammit: pg. 443, column 1, 3rd paragraph; pg. 444-445, columns 2 and 1 respectively.

One of ordinary skill-level in the art at the time of invention would have modified the teachings of CSC with Zammit, since it would have been obvious to integrate a local area or wide area network that would support the day-to-day operations of multiple ground tracking stations. Although Zammit discloses his simulation as being performed by one operator, CSC elevates it a step further by adding IPs to the modulated signal thus providing instant link between the airborne system and the *multiple* ground station operators via the Internet. Zammit's satellite emulator/simulator integrated with CSC's OMNI program provides the requirement for experimentation of multiple ground control operator's ability to communicate to their colleagues and airborne platforms.

Claim 1*:A method of simulating the operation of a spacecraft comprising the steps of requesting a connection to one of a plurality of simulated ground stations; generating a range server name; in response: other range server name, generating server location parameters; instantiating a range server dedicated to a single ground station; calculating range data for each of the plurality of simulated ground stations; and, providing the range data for one of the plurality of simulated ground stations. (As taught in Zammit, pg.445-445 Section III).*

Claim 2*:A method as recited in claim 1 wherein the step of requesting comprises the step of requesting a connection to a simulated ground station from a spacecraft status and control client: (As taught in Zammit: pg. 446, column 2).*

Claim 3*:A method as recited in claim 1 wherein the step of having a common IP address for the plurality of simulated ground stations while providing a unique port address for each simulated ground station: (As taught in CSC briefing: slides1-4 and12-14).*

Claim 4**:** *A method as recited in claim 1 wherein the step of requesting comprises requesting a connection to multiple ground stations, wherein each ground station has a unique port address and a common port IP address:(As taught in CSC briefing: slides 9-14).*

Claim 5**:** *A method as recited in claim 4 wherein the step of generating a range comprises generating the range server name in response to the unique port address and using that name to instantiate a range server specific to a unique ground station:(As taught in CSC briefing: slides 9-14).*

Claim 6: *A method as recited in claim 1 further comprising the step of providing tracking information for the one of the plurality of simulated ground stations: (As taught in Zammit, pg.445-445 Section III).*

Regarding claims 7-12

As to claims 7-12, they recite the same or equivalent limitations and are rejected based upon the same reasoning as claims 1-6.

***Claim 7**:A method of simulating the operation of a spacecraft comprising the steps of generating range, attitude and elevation data for a plurality of ground stations simultaneously; identifying a desired ground station from the plurality of ground stations; and, providing range data for the desired ground station to a real time client: (As taught by Zammit: pg. 446 column 1, paragraphs 2-5).*

***Claim 8**: A method as recited in claim 7 wherein the step of identifying comprises the step of generating a range server name and generating a tracking server name: (As taught in CSC brief: pg.10-14).*

***Claim 9**: A method as recited in claim 7 wherein the step of identifying further comprises in response to the step of generating a range server name and tracking server name, generating server location parameters:(As taught in CSC brief: pg.10-14).*

***Claim 10**: A method as recited in claim 7 further comprising the step of generating a connection to one of the plurality of simulated ground stations: (As taught in CSC brief: pg.10-14).*

***Claim 11**: A method as recited in claim 7 wherein the step of requesting comprises the step of requesting a connection to the multiple ground stations, wherein each ground station has a unique port address: (As taught in CSC brief: pg.10-14; and Zammit: pg. 442, paragraphs 7-8).*

Claim 12: *A method as recited in claim 8 wherein the step of generating a range server name comprises generating the range server name in response to the unique port address and wherein the step of generating a tracking server name comprises generating the tracking server name in response to the unique port address:(As taught in CSC brief: pg.10-14).*

Regarding claim 13-15

As to claims 13-15, they recite the same or equivalent limitations and are rejected based upon the same reasoning as claims 1-6, supra.

Claims 13: *A spacecraft emulation system comprising: a spacecraft status and control client; an interface coupled to the spacecraft status and control client for generating identification information for a desired ground station; a range data generator for generating range data for a plurality of ground stations; and, a range server coupled to the range data generator and spacecraft status and control client having the range data for said plurality of ground stations therein, said range server providing range data to said spacecraft status and control client: (As taught in CSC brief: pg.10-14).*

Claim 14: *A spacecraft emulation system as recited in claim13 further comprising a tracking server coupled elevation and attitude data generator and the spacecraft status and control client, the tracking server providing elevation and azimuth data to said spacecraft status and control client: (As taught in Zammit: pg. 444, Section II ADCS Development Process.).*

***Claim 15**: A spacecraft emulation system as recited in claim 13 wherein said interface, range data generator, range server, tracking data generator and tracking server are coupled within a single unit: (As taught in CSC brief: slide 10).*

Correspondence Information

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tom Stevens whose telephone number is (703) 305-0365, Monday-Friday (8:00 am- 4:30 pm) or contact Supervisor Mr. Kevin Teska at (703) 305-9704.

9. Any inquire of general nature or relating to the status of this application should be directed to the Group receptionist whose phone number is (703) 305-3900.

THS
August 11, 2003

Wm. Thomas
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Patent Examiner